

Application No.: 10/732,724
Art Unit 3752

Patent Application
Attorney Docket No. D/A3149

AMENDMENTS TO THE SPECIFICATION

A. At page 5, lines 24-28 delete the pending text and replace therewith as follows:

-- As shown, the micromechanical dispensing mechanisms 210, 212 possess inlets 213, 214 for receiving a fluid to be dispensed. The inlets 213, 214 are fluidly connected to channels 254, 255 that conduct fluid from the fluid reservoirs 220, 222 to the micromechanical dispensing mechanisms 210, 212. The fluid reservoirs 220, 222 are removably fluidly coupled to channel ports 226, 228 by means of the reservoir ports 223, 225 of fluid reservoirs 220, 222. -- .

B. At page 8, lines 4-21 delete the pending text and replace therewith as follows:

-- Additionally depicted in FIG. 2 is an optional orifice plate 295, further comprising an orifice 296. The optional orifice plate 295 is arranged such that fluid 271, 273 dispensed by at least one of the micromechanical dispensing mechanism 210, 212 is further dispensed through the orifice 296, which dispensing of the fluid 271, 273 through the orifice 296 is depicted in FIG. 2 by reference numbers 271a, 273a.

In one embodiment, the optional orifice plate 295 is similar or identical to the orifice plate containing an orifice as depicted in FIG. 1 and described from col. 3, l. 57 to col. 4, l. 54 of U.S. Patent No. 6,378,780 to Edward J. Martens III et al., which patent is incorporated by reference herein, and which patent is hereinafter referred to as the "Martens patent" or simply as "Martens."

Referring still to FIG. 2, several embodiments of the micromechanical dispensing mechanisms 210, 212 are now described in accordance with the current invention.

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In one embodiment, one or more of the micromechanical dispensing mechanisms 210, 212 comprises electrostatically-driven membranes, which electrostatically-driven membranes are depicted in FIG. 2 by reference number 210a. In one embodiment, for example, one or more of the present micromechanical dispensing mechanisms 210, 212 comprises a membrane that is similar or identical to the electrostatically-actuated diaphragm 10 of the fluid ejector 100 as described and depicted in the foregoing U.S. Patent No. 6,357,865 to Joel A. Kubby et al., which patent is incorporated herein by reference, and which patent is hereinafter referred to as the "Kubby patent" or simply "Kubby". -- .

C. At page 9, lines 9-15 delete the pending text and replace therewith as follows:

-- Referring again to the present FIG. 2, in a further embodiment, one or more of the micromechanical dispensing mechanisms 210, 212 comprises an electrostatically-actuated piston, which electrostatically-actuated piston is depicted in FIG. 2 by reference number 210b. In one embodiment, for example, one or more of the present micromechanical dispensing mechanisms 210, 212 comprises a piston that is similar or identical to the electrostatically-actuated piston 110 of the fluid ejector 100 as described in the foregoing U.S. Patent No. 6,367,915 to Arthur M. Gooray et al., which patent is incorporated by reference herein, and which patent is hereinafter referred to as the "Gooray '915 patent." -- .

D. At page 9, lines 32-34 delete the pending text and replace therewith as follows:

-- Again referring to the present FIG. 2, in another embodiment, one or more of the micromechanical dispensing mechanisms 210, 212 comprises magnetically-actuated membranes, which magnetically-actuated membranes are depicted in FIG. 2 by reference number 210c. -- .

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E. At page 10, lines 30-32 delete the pending text and replace therewith as follows:

-- Referring again to the present FIG. 2, in another embodiment, one or more of the micromechanical dispensing mechanisms 210, 212 comprises a ballistic aerosol micromechanical dispensing mechanism , which ballistic aerosol micromechanical dispensing mechanism is depicted in FIG. 2 by reference number 210d . -- .

F. At page 11, lines 27-29 delete the pending text and replace therewith as follows:

-- Again referring to the present FIG. 2, in another embodiment, one or more of the micromechanical dispensing mechanisms 210, 212 comprises an arrangement incorporating a thermally-actuated paddle vane , which thermally-actuated paddle vane is depicted in FIG. 2 by reference number 210e . -- .

G. From page 15, line 33 to page 16, line 5 delete the pending text and replace therewith as follows:

-- The micromechanical dispensing mechanisms 410, 411, 412 possess inlets 413, 414, 415 for receiving a fluid to be dispensed. The inlets 413, 414, 415 are fluidly connected to channels 454, 455, 456 that conduct fluid from fluid reservoirs 420, 421, 422 to micromechanical dispensing mechanisms 410, 411, 412. The fluid reservoirs 420, 421, 422 are removably fluidly coupled to channel ports 426, 427, 428 by means of the reservoir port coupling mechanisms 423, 424, 425 of the fluid reservoirs 420, 421, 422. One skilled in the art is familiar with a variety of means to construct a removable fluid reservoir. -- .

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H. From page 16, line 30 to page 17, line 16 delete the pending text and replace therewith as follows:

– In one embodiment of the micromechanical dispensing device 400, one or more of the micromechanical dispensing mechanisms 410, 411, 412, comprises an electrostatically-driven membrane, which electrostatically-driven membrane is depicted in FIG. 4 by reference numbers 410a, 411a and which is substantially similar, or identical to the electrostatically-driven membrane described in the foregoing Kubby patent as described in connection with FIG. 2 hereinabove.

In another embodiment of the micromechanical dispensing device 400, one or more of the micromechanical dispensing mechanisms 410, 411, 412, comprises an electrostatically-actuated piston, which electrostatically-actuated piston is depicted in FIG. 4 by reference numbers 410b, 411b and which is substantially similar, or identical to the electrostatically-actuated piston described in the foregoing Gooray '915 patent as described in connection with FIG. 2 hereinabove.

In a further embodiment of the micromechanical dispensing device 400, one or more of the micromechanical dispensing mechanisms 410, 411, 412, comprises a magnetically-actuated membrane, which magnetically-actuated membrane is depicted in FIG. 4 by reference numbers 410c, 411c and which is substantially similar, or identical to the magnetically-actuated membrane described in the foregoing Genovese patent as described in connection with FIG. 2 hereinabove.

In a further embodiment of the micromechanical dispensing device 400, one or more of the micromechanical dispensing mechanisms 410, 411, 412, comprises a thermally-actuated paddle vane, which thermally-actuated paddle vane is depicted in FIG. 4 by reference numbers 410e, 411e and which is substantially similar, or identical to the thermally-actuated paddle-vane described in the foregoing Silverbrook patent as described in connection with FIG. 2 hereinabove.

In yet a further embodiment one of the micromechanical dispensing device 400, or more of the micromechanical dispensing mechanisms 410, 411, 412, comprises a ballistic aerosol dispensing mechanism, which ballistic aerosol dispensing

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mechanism is depicted in FIG. 4 by reference numbers 410d, 411d and which is substantially similar, or identical to the ballistic aerosol dispensing mechanism described in the foregoing Peeters '718 patent as described in connection with FIG. 2 hereinabove. -- .

I. From page 18, line 32 to page 19, line 2 delete the pending text and replace therewith as follows:

-- Additionally depicted in FIG. 4 is an optional orifice plate 495, further comprising an orifice 496. The optional orifice plate 495 is arranged such that fluid 471, 472, 473 dispensed by at least one of the micromechanical dispensing mechanisms 410, 411, 412 is further dispensed through the orifice 496, which dispensing of the fluid 471, 472, 473 through the orifice 496 is depicted in FIG. 4 by reference numbers 471a, 472a, 473a. -- .

J. From page 21, line 28 to page 22, line 2 delete the pending text and replace therewith as follows:

-- The micromechanical dispensing mechanism 610 possess an inlet 613 for receiving fluids to be dispensed by means of channel 611-611'. The channel 611-611' is fluidly connected to the exit of valve 665. The valve 665 selectively couples fluid reservoirs 620, 621, 622 to dispensing mechanism 610 as described in more detail below. The channel 612 conducts fluid from fluid reservoirs 620, 621, 622 to the entrance of valve 665. The channel 612 is fluidly connected to channel ports 626, 627, 628. The channel ports 626, 627, 628 provide removable fluid coupling to the fluid reservoirs 620, 621, 622 by means of reservoir ports 623, 624, 625 of the fluid reservoirs 620, 621, 622. -- .

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K. At page 23, lines 4-23 delete the pending text and replace therewith as follows:

-- In one embodiment of the micromechanical dispensing device 600, the micromechanical dispensing mechanism 610 comprises an electrostatically-driven membrane , which electrostatically-driven membrane is depicted in FIG. 6 by reference number 610a and which is substantially similar, or identical to the electrostatically-driven membrane described in the foregoing Kubby patent as described in connection with FIG. 2 hereinabove.

In another embodiment of the micromechanical dispensing device 600 the micromechanical dispensing mechanism 610 comprises an electrostatically-actuated piston , which electrostatically-actuated piston is depicted in FIG. 6 by reference number 610b and which is substantially similar, or identical to the electrostatically-actuated piston described in the foregoing Gooray '915 patent as described in connection with FIG. 2 hereinabove.

In a further embodiment of the micromechanical dispensing device 600 the micromechanical dispensing mechanism 610 comprises a magnetically-actuated membrane , which magnetically-actuated membrane is depicted in FIG. 6 by reference number 610c and which is substantially similar, or identical to the magnetically-actuated membrane described in the foregoing Genovese patent as described in connection with FIG. 2 hereinabove.

In a further embodiment of the micromechanical dispensing device 600 the micromechanical dispensing mechanism 610 comprises a thermally-actuated paddle vane , which thermally-actuated paddle vane is depicted in FIG. 6 by reference number 610e and which is substantially similar, or identical to the thermally-actuated paddle-vane described in the foregoing Silverbrook patent as described in connection with FIG. 2 hereinabove.

In yet a further embodiment of the micromechanical dispensing device 600 the micromechanical dispensing mechanism 610 comprises a ballistic aerosol dispensing mechanism , which ballistic aerosol dispensing mechanism is depicted in FIG. 6 by reference number 610d and which is substantially similar, or identical to the

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ballistic aerosol dispensing mechanism described in the foregoing Peeters '718 patent as described in connection with FIG. 2 hereinabove. -- .

L. At page 25, lines 4-6 delete the pending text and replace therewith as follows:

-- Additionally depicted in FIG. 6 is an optional orifice plate 695, further comprising an orifice 696. The optional orifice plate 695 is arranged such that fluid 671, 672, 673 dispensed by the micromechanical dispensing mechanism 610 is further dispensed through the orifice 696 , which dispensing of the fluid 671, 672, 673 through the orifice 696 is depicted in FIG. 6 by reference numbers 671a, 672a, 673a. -- .

M. At page 25, lines 15-19 delete the pending text and replace therewith as follows:

-- The micromechanical dispensing mechanisms 710, 711, 712 possess inlets 713, 714, 715 for receiving fluids to be dispensed. The inlets 713, 714, 715 are fluidly connected to the channel 754 that conducts fluid from the fluid reservoir 720 to the micromechanical dispensing mechanisms 710, 711, 712. The fluid reservoir 720 is removably fluidly coupled to channel port 726 by means of the reservoir port 723 of the fluid reservoir 720. -- .

N. At page 26, lines 11-30 delete the pending text and replace therewith as follows:

-- In one embodiment of the micromechanical dispensing device 700, one or more of the micromechanical dispensing mechanisms 710, 711, 712 comprises an electrostatically-driven membrane , which electrostatically-driven membrane is depicted in FIG. 7 by reference number 710a, 711a and which is substantially similar, or identical to the electrostatically-driven membrane described in the foregoing Kubby patent as described in connection with FIG. 2 hereinabove.

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In another embodiment of the micromechanical dispensing device 700, one or more of the micromechanical dispensing mechanisms 710, 711, 712 comprises an electrostatically-actuated piston, which electrostatically-actuated piston is depicted in FIG. 7 by reference number 710b, 711b and which is substantially similar, or identical to the electrostatically-actuated piston described in the foregoing Gooray '915 patent as described in connection with FIG. 2 hereinabove.

In a further embodiment of the micromechanical dispensing device 700, one or more of the micromechanical dispensing mechanism 710, 711, 712 comprises a magnetically-actuated membrane, which magnetically-actuated membrane is depicted in FIG. 7 by reference number 710c, 711c and which is substantially similar, or identical to the magnetically-actuated membrane described in the foregoing Genovese patent as described in connection with FIG. 2 hereinabove.

In a further embodiment of the micromechanical dispensing device 700, one or more of the micromechanical dispensing mechanisms 710, 711, 712 comprises a thermally-actuated paddle vane, which thermally-actuated paddle vane is depicted in FIG. 7 by reference number 710e, 711e and which is substantially similar, or identical to the thermally-actuated paddle-vane described in the foregoing Silverbrook patent as described in connection with FIG. 2 hereinabove.

In yet a further embodiment of the micromechanical dispensing device 700, one or more of the micromechanical dispensing mechanisms 710, 711, 712 comprises a ballistic aerosol dispensing mechanism, which ballistic aerosol dispensing mechanism is depicted in FIG. 7 by reference number 710d, 711d and which is substantially similar, or identical to the ballistic aerosol dispensing mechanism described in the foregoing Peeters '718 patent as described in connection with FIG. 2 hereinabove. --

O. At page 28, lines 13-16 delete the pending text and replace therewith as follows:

-- Additionally depicted in FIG. 7 is an optional orifice plate 795, further comprising an orifice 796. The optional orifice plate 795 is arranged such that fluid 771